EXHIBIT J

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SHEPPARD, MULLIN, RICHTER & HAMPTON LLP
A Limited Liability Partnership
Including Professional Corporations
NEIL A.F. POPOVIĆ, Cal. Bar No. 132403
ANNA S. McLEAN, Cal. Bar No. 142233
TENAYA RODEWALD, Cal. Bar No. 248563
LIÊN H. PAYNE, Cal. Bar No. 291569
JOY O. SIU, Cal. Bar No. 307610
Four Embarcadero Center, 17th Floor
San Francisco, California 94111-4109
Telephone: 415.434.9100
Facsimile: 415.434.3947
Email: npopovic@sheppardmullin.com
amclean@sheppardmullin.com
trodewald@sheppardmullin.com
lpayne@sheppardmullin.com
jsiu@sheppardmullin.com

Attorneys for Defendant,
SEAGATE TECHNOLOGY LLC

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA, SAN FRANCISCO DIVISION

IN RE SEAGATE TECHNOLOGY LLC LITIGATION CONSOLIDATED ACTION	Case No. 3:16-cv-00523-JCS **DECLARATION OF PATRICK DEWEY IN SUPPORT OF SEAGATE'S OPPOSITION TO PLAINTIFFS' MOTION FOR CLASS CERTIFICATION** **Date:** March 30, 2018 **Time:** 9:30 a.m. **Place:** Courtroom G **Judge:** Hon. Joseph C. Spero Second Consolidated Amended Complaint filed: July 11, 2016

REDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED

DECLARATION OF PATRICK DEWEY

I, Patrick Dewey, declare as follows:

1. I have personal knowledge of the facts set forth herein, which are known by me to be true and correct, and if called as a witness, I could and would competently testify thereto.

2. I received a B.S. in Electrical Engineering from the University of Nebraska in 1980.

3. I have worked as an engineer in the hard drive industry for over 37 years. For much of that time, I have been responsible for the design, development and transfer to mass production of hard disk drive products. I have also worked as a reliability and failure analysis engineer. I began working at a company called Control Data Corporation, where I worked from 1973 to 1975 (before college) and again during the end and after college. At Control Data Corporation I worked on test equipment maintenance and repair, and as I got my, degree I moved into quality engineering. From 1981 to 1982 I worked as a reliability engineer for Brown Disc Manufacturing. As a reliability engineer, I was responsible for testing our hard disk drive products and ensuring that they met its specifications before shipment. From 1982 to 1985 I worked as a failure analysis engineer for MiniScribe determining the causes and corrective actions for hard disk drives that did not pass testing. From 1985 to 1992, I worked at Maxtor, as an engineer developing disk drives and managing a team of engineers that developed disk drives. In 1992 I joined Conner Peripherals. At Conner, I was the lead of a design group, meaning I was the Program manager, managing the development of new hard drives. In 1996, Conner was acquired by Seagate in Technology LLC ("Seagate") and I joined Seagate at that time, continuing my role managing the development of hard disk drives, at Seagate's Colorado facility. I then worked for a time in advanced drive development, in which I examined and determined the existing capabilities and new technologies that would have to be used to be able to build new (advanced) hard drives. Then for 4-5 years, I was a core team lead, meaning I managed teams that would design and develop a drive, launch it, and then transfer it into mass production. For a time, I was a super core team lead, meaning I managed all other core team leaders. In 2008 I again became a core team lead and have had that position ever since. I was core team lead for the Grenada hard drives, including the Grenada Classic, Grenada BP and Grenada BP2, in which role I oversaw the design, development and transfer to mass production of these

drives. The team I managed oversaw the reliability testing for the Grenada drives and was responsible for corrective actions required. I prepared many of the documents that Hospodor cites in his declaration, including the shipping approval (qualification) documents for the Grenada Classic SBS release, Grenada Classic disty/OEM release, Grenada BP SBS release, Grenada BP disty/OEM release, and Grenada BP2 release.

4. I have reviewed the declaration of Andrew Hospodor ("Hospodor") filed in support of Plaintiffs' Motion for Class Certification. Hospodor reviewed internal Seagate documents and stated opinions he claims are based on those documents. However, as explained below, many of Hospodor's statements regarding the development, reliability testing, functioning and failure of hard drives (and of the Grenada drives) misinterpret Seagate documents and are clearly erroneous.

A. Background on Seagate Drive Development

5. Seagate designs and sells drives for different environments and anticipated uses. Seagate sells "SBS" products which are external, backup drives attached to computers via USB cables. These products typically receive the lowest amount of use—typically only a few hours a day (at most)—because they are used for backup only, not for running programs or as the primary data storage for a computer. Seagate's "disty/OEM" products are internal, desktop hard drives—*i.e.*, hard drives that are installed inside desktop computers and which usually provide the primary storage for programs and data. (As relevant here, "OEM" refers to desktop and laptop computer manufacturers like Dell, Hewlett-Packard (HP), Lenovo, Apple, etc.) The disty/OEM drives are used more than external, USB drives, but typically not 24/7. In addition, even when a desktop computer is in use, the hard drive is not being used 100% of the time, and is not being used anywhere near its maximum workload. Seagate also sells "enterprise" or "mission critical" types of drives mainly used in commercial or businesses applications. These drives are designed to be operated 24 hours a day 7 days a week at high-workloads (*i.e.*, in applications that are reading and writing large amounts of data to the drives). These applications are typically servers, data-centers, cloud computing and backup, and other large-scale operations run by commercial enterprises. Seagate makes many other kinds of drives as well, such as laptop hard drives, drives that are

intended for recording television programming (in "DVRs" like TiVo), etc. All of these drives have different types of uses, and because of that, different specifications.

6. From April 2011 to early 2016, Seagate used the internal codename "Grenada" to refer to a specific family of drives that included the drives with model number ST3000DM001. The ST3000DM001 was the 3 terabyte (TB) version of the Grenada drive. It had three platters for storing data, each of 1 TB capacity. There were 2 read-write heads for each platter, so the ST3000DM001 had 6 read-write heads total. Seagate also made 1 TB and 2 TB Grenada drives which had the same general design, and many of the same parts but different total numbers of platters and heads and therefore different total storage capacity. There were three different versions of the Grenada drives: the Grenada Classic, Grenada BP and Grenada BP2. There were significant changes between the Grenada Classic and Grenada BP versions, including new designs for some parts (new slider geometry), a revised controller, and a new servo ASIC (chip). In fact, the different versions were sufficiently different that Seagate went through new qualification (RDT) testing for each of the versions of the Grenada drive. (*See e.g.*, Exs. 2, 4, 5 (Disty/OEM approvals for Grenada Classic, BP and BP2 respectively).)[1] In other words, the Grenada Classic, Grenada BP and Grenada BP2 were not the "same design" drive, only the same capacity, therefore Seagate continued to use the same model number for all of them.

7. The Grenada drives were designed as internal, desktop "disty/OEM" drives. However, they were also included in some of Seagate's SBS (external, USB) drive ***products***. This means Seagate installed the drives into an external case, with a power supply, and created a stand-alone product that could be plugged into other computers and devices via a USB cable. In order to use the drives in this way, Seagate tested and validated the drives for the specifications appropriate for the external, USB use. By contrast, the disty/OEM drives were sold without an external casing and were then installed inside desktop computers by consumers or OEMs in order to be used. In that case, Seagate tested and verified that the drives would meet the specifications for internal, desktop hard drive use. For Grenada drives, Hospodor is wrong when he states in Paragraph 42 that the SBS products included "Internal Drive Kit" products. My team was responsible for the

[1] All Exhibit numbers refer to the exhibits to the Declaration of Liên Payne.

qualification and reliability of the internal, desktop products (including the Internal Kit products), and the Desktop HDD Internal Kit products were not SBS products, but rather were qualified and tested as part of the Disty release and were Disty products.

8. However, Seagate did not build different ST3000DM001 drives for SBS, disty and OEM channels. Seagate qualified the Grenada drives for use in SBS products first, while working to continuously improve the drives until they reached the disty/OEM specifications. At that point, Seagate qualified them for sale into the disty/OEM channel. Improvements made to the drives between SBS release and disty/OEM release were then incorporated into all of the Grenada drives, including the ST3000DM001model on a going forward basis.

9. Hospodor repeatedly refers to "head related" failures and "contamination issues" as if all "head related" and "contamination" issues were the same or related. This is not at all true. "Head related" failure is not a specific type of failure that Seagate recognized. From the Hospodor declaration, it seems he uses the term to mean anything from a mechanical problem with any component of the read-write head, mechanical issues caused by lubrication or contamination, electrical problems, and noisy electrical signals from the head. . This is a very broad range of possible problems which are ***not*** related to each other. Contamination is similarly diverse. Contamination is a non-specific term that can refer to any particles or chemicals that may be introduced into the hard disk assembly ("HDA" or "drive") by assembled components, during the assembly process, from the tools used in assembling the drive, or from wear or chemical degradation of parts within the drive. The latter can result from "outgassing" of chemicals from adhesives and other volatile compounds, and mechanical wear or breakdown of parts within the drive. Contamination can also refer to lubricant that is normally present on the surface of the disks (on the media) accumulating in the wrong place within a hard drive. For example, if the drive is in a high vibration environment, or if the drive is bumped or experiences a mechanical shock, this may cause the read-write head to dip closer to the media and pick up lubrication or "contamination."

B. Response to Paragraphs 59-82 of the Hospodor Declaration

10. Seagate first approved the Grenada drive for shipment in April 2011. The approval was documented in the "Grenada SBS SAD Final 4/28/11" which I prepared. (*See* Ex. 1

[FED_SEAG0026697].) "SBS" means Seagate Branded Solutions, which at the time were external, USB drives. "SAD" means Shipping Approval Document. The April 2011 SBS SAD provided approval for shipping the Grenada Classic drive as part of a ***single, external USB product*** (codename "Rockit"). This is shown on page 26699 which said that the approval "Applies to Rockit SBS Product, others in progress!"

11. The Rockit product was an external, backup drive product used over a USB connection. This type of product is a low-use product. Also, since Seagate was building the entire external product (the casing/enclosure, power supply, fans, etc. that were part of the completed product), Seagate could control the environment of the drive in terms of power, temperature, mechanics of the enclosure, etc. Thus, it was a restricted environment. Because of these factors, the specifications for qualifying the Grenada drive for use in the Rockit product were slightly lower than they were when we later released the Grenada drive for use as an internal, desktop hard drive. In particular, there was no AFR specification. Rather the drive was required to meet an MTBF specification of 100,000 hours. An MTBF of 100,000 hours means that for a population of drives, the expected average time to failure will be 100,000 hours of use. This is an appropriate specification because drives in external, USB products do not receive high amounts of use or high workloads. When we approved the Grenada Classic drive for shipping in the Rockt product, the drive met Seagate's reliability specifications for that product, including an MTBF over 100,000 hours.

12. In Paragraphs 68-70, Hospodor comments on a different product, the Raptor product that was ***not approved*** for release. In Paragraph 69, Hospodor admits that the Raptor product was not approved for release at that time. The Raptor ***product*** was not approved because the "box" (enclosure) was over-temperature and it did not pass drop tests. The over-temperature issue was a result of problems with the design of the external Raptor box, ***not an issue with the drive itself***. Since that particular box design was not approved, the fact that it was over-temperature is meaningless. The Rockit box and product, which was approved, did not have any temperature problems.

13. In Paragraphs 71-73, Hospodor claims that because the drives went through testing at four different times "MAT 1.2/1.3/BtC/2.0" Seagate was testing ***the same drives*** four different times after "reworking" and was attempting to "whittle down a 'bone pile' of drives that failed one or more previous tests and must be moved from "work in process" into either the distribution channel or scrap." These statements are completely inaccurate. I explained in my deposition in this case that the tests MAT 1.2, 1.3 were conducted **<u>during the development process</u>** of the drive, as the drive progressed through different design phases and incorporated different design changes, and before the drive ever reached the qualification stage. (Ex. 12 [Dewey Depo.] at 87:19-88:16, 135:18, 136:15, 167:22-168:21.) The drives in testing at each stage were ***different*** drives. In fact, Hospodor acknowledges in his Paragraph 40 that Seagate conducts testing "during 9 of the 11 drive development phases." Thus, the different MAT tests reflect the normal development process.

14. In Paragraph 79, Hospodor claims that 23 of the 129 failures listed were "head instability" and he tries to tie head instability to contamination or lubrication problems. He also claims that "head-related failures, in addition to contamination, was a recurring issue with the Drives." Head instability is a specific failure mode that almost always refers to ***electrical noise*** in the signal from the read/write head—not mechanical "instability," lubrication, contaminants or "pile up on the air bearing surface ("ABS")" as Hospodor claims. Electrical head instability has become more of an issue as drive areal density has increased dramatically. In particular, electrical head instability is aggravated by high workloads and temperatures and is therefore a failure mode that is seen at some level in every type of high-areal-density drive that is tested at high temperatures and high workloads (as is done in Seagate's reliability testing). Head instability is a failure mode that is more likely to impact businesses that use drives in 24/7 high-workload environments like data-centers, servers, and cloud-storage. It is much less likely to impact consumers who used the drives as external, backup drives or as internal, desktop drives, which generally have lower work-loads and temperatures.

15. On October 18, 2011, Seagate approved the Grenada Classic drive for shipment to customers as an internal, desktop hard drive. This was called the disty/OEM release, which means that the drive was approved for shipment to the distribution or "disty" channel as an internal,

desktop hard drive, and to OEMs for use as an internal, desktop hard drive. The approval document was the "Grenada SAD Approval 10/18/11" which I prepared. (Ex. 2 [FED_SEAG0026839].) As Hospodor acknowledges in Paragraph 80, the "demonstrated reduced AFR" for the drive was 0.95%. This means that Seagate had demonstrated manufacturing or other changes that resulted in an AFR of 0.95%. The Grenada drives met the specification for disty/OEM.

16. Hospodor's Paragraph 82 is an inaccurate description of the failure modes listed in Exhibit 2 [FED_SEAG0026839]. Hospodor tries to tie "degraded head," "particle induced media damage" and "head crashes" together as if they were all related phenomena. Particle induced media damage is a category of media defects that can have multiple causes because there are multiple possible sources for particle contamination within a hard drive (parts wearing and shedding particles over time) or external contamination introduced during manufacturing. Particle induced media damage does not imply a head crash or a degraded head. Degraded heads can mean electrical **<u>or</u>** mechanically induced problems with the heads, with any number of unrelated causes. In addition, as explained above, unstable heads usually means electrically unstable heads (usually high temperature exacerbated electrical instabilities or noise in the read head). Degraded heads and unstable heads do not imply head crashes at all. Furthermore, if there had been a head crash, the failure description would say head crash. Head crashes were not a significant failure mode for the Grenada drives, and Hospodor is simply wrong to try to tie together these disparate types of failures (electrically degraded heads, mechanically degraded heads, particle induced media damage and head crashes) and claim that they are all related. They are not.

C. Response to Paragraphs 83-89 of the Hospodor Declaration

17. Hospodor's Paragraphs 83 discusses the SBS SAD for the Grenada BP drive on April 18, 2012, which I prepared. (Ex. 3 [FED_SEAG0026867].) The Grenada BP was a new version of the Grenada drive with several important changes from the Granada Classic. Furthermore, this SAD approved the Grenada BP for shipment as part of SBS products—*i.e.*, ***external, USB products***. However, as previously explained, Seagate did not advertise an AFR for external, USB products at issue in this SBS authorization. Furthermore, although Seagate calculated a demonstrated reduced AFR of 2.0%, the Grenada BP drives were not required to meet an AFR specification to qualify for

inclusion in SBS products (external, USB products). Instead, as explained above, drives for use in external, USB products were required to meet the 100,000 MTBF specification, which Seagate met at this time because Seagate demonstrated that the validated MTBF of the Grenada BP drives was 118,000 for the Grenada BP drives. (*See* Ex. 3 [FED_SEAG0026867] at p. 26886.)

18. On June 5, 2012, Seagate approved the Grenada BP drive for shipment as an internal, desktop drive (disty/OEM) via a document I prepared. (*See* Ex. 4 [FED_SEAG0026751 ("GrenadaBP ECQ Approved Final 6-5-12")].) At this time, Seagate demonstrated a reduced AFR of 0.98% for the Grenada BP drives. (Ex. 4 [FED_SEAG0026751] at p. 26783.) The "raw" AFR in this document (2.917%) does not include the validated changes that reduced the AFR to 0.98%. Seagate anticipated production of Grenada BP drives would equal production of Grenada Classic drives by around "FY 13 SEPT" which was September of 2012. (Ex. 4 at p. 26787.)

D. Response to Paragraphs 90-117 of the Hospodor Declaration

19. In his Footnote 53, Hospodor claims that Seagate's "5-year BiC service life Strategic Reliability Initiative," shows that Seagate's design and reliability processes were flawed or inadequate. Hospodor cites four documents, but they are all versions of the same document. In fact, two of the documents are identical. (See FED_SEAG0056341; FED_SEAG0068026.) Furthermore, Hospodor completely mischaracterizes the documents. Seagate, like other hard drive manufacturers, is continuously trying to improve our products and reliability. This document's title refers to the fact that Seagate was striving to be "BiC" or "best in class." (*See* Ex. 6 [FED_SEAG0056259].) The document simply reflects one of the areas in which Seagate strives for continuous improvement, other areas include speed, density (or storage capacity), and price. The document lists "raw MTBF metrics, design margin testing, life testing and validation, SBS Design Maturity Test requirements, defective parts per million demo quantity requirements, and the firmware release process" as areas for possible improvement because those are the primary areas that factor into reliability. Obviously Seagate considered each of the areas that factor into reliability, to see if it could make improvements in any of them.

E. Response to Paragraphs 119-126 of the Hospodor Declaration

20. In Paragraphs 119-126 of his declaration, Hospodor claims that the manufacturing yield[2] for the Grenada Classic drives was low and that this is "indicative of an unreliable, defective product." Hospodor does not explain why low yield would be indicative of an unreliable, defective product being shipped to or reaching consumers. Hospodor's claims are not correct.

21. In my experience at Seagate, products that are first to incorporate a new innovation, in particular a new density, or a higher speed, new market application can have low yields initially because they are new and challenging to produce. If new technology were easy to produce, then it would be ubiquitous in the market already and would not be "new." Thus, when Seagate starts manufacturing a product that "pushes the envelope" in some way, we expect that yields may be low initially, and will improve as we learn to optimize and improve the manufacturing of the drive. In my 37+ years in the hard drive industry, I have observed that low yields often occur at transitions to new, higher densities. This is exactly what happened for the Grenada drives.

22. Hospodor's Paragraphs 120-123 concern the 3TB Grenada Classic drives. The Grenada Classic drives were the first drives to achieve a 1 terabyte (TB) of storage capacity ***per platter*** of the drive—the highest areal density available from any hard drive supplier at that time. This was a big step from the engineering perspective, and we **<u>expected</u>** that the yield on the Grenada Classic drives would be low initially.

23. As a result, we also planned to produce the drive at low volumes initially. In fact, the initial SBS release was only for a single, external USB product. All of this is shown by the document Hospodor cites to support Paragraphs 120-123. (Ex. 1 [FED_SEAG0026697].) As discussed above, this is the initial Ship Approval Document (SAD) for the Grenada drive to be used in the single, external USB product codenamed Rockit. (*See* Ex. 1 [FED_SEAG0026697] at p. 26699.) This initial approval was for low volume production of the Grenada SBS drive. For example, page 26700 states that production in the last quarter of 2011 was expected to be only 79,995 of the 3TB drives, which was expected to grow to 618,414 3TB drives in Q2' 2012. This is

[2] This means, of the drives that started manufacturing, the percentage that resulted in saleable products.

a slow, low volume ramp for the 3TB drives, meaning that even if yields were relatively low, it would not cause large financial losses or put 'pressure' on Seagate. (By comparison, the higher yielding 1TB drives were expected to ramp from 110,830 drives in Q4 2011 to over 3.3 million in Q2 2012.) Since this information is in the document Hospodor cited, I do not understand why he did not seem to notice it. Pages 26729-26731 of Exhibit 1 [FED_SEAG0026697] show projected yields, and how those yields were expected to improve over time, for the 1TB, 2TB and 3TB drives respectively. Seagate projected these yields and made the choice to begin producing the drive for the SBS product with the expectation that production of the 3TB drives would start small and increase slowly, allowing Seagate time to improve yield. Obviously, those yields were not "unacceptable" to Seagate. In fact, they were expected.

24. Furthermore, Hospodor focuses on "prime" yields—which is the yield of 3TB drives ***at the 3TB capacity***. This does not take account of the "waterfalling" of higher-capacity drives to lower capacities that is part of the manufacturing process, which gave a much higher over-all or throughput yield for the production line for 3TB drives. Seagate manufactured three different Grenada drives: a version with 1 platter and a total of 1TB capacity and 2 read/write heads, a version with 2 platters and a total of 2TB capacity and 4 read/write heads, and the ST3000DM001 drive, which had 3 platters and 3TB total capacity and 6 read/write heads. Seagate expected that the yield on the ST3000DM001 (3TB) drive would be lowest, because it would be the most complicated and difficult to manufacture. (*See* Ex. 1 [FED_SEAG0026697] at pp. 26729-26731 [showing projected yields for the 1TB were higher than for 2TB, which were higher than for 3TB drives].) The 3TB drives also required all three platter-head combinations to function optimally at the new higher areal density introduced for the Grenada drives. However, drives that did not yield at the 3TB capacity could be "waterfalled" ***to lower capacities***. For example, if one of the three platters, or a read/write head, did not test as being operative, then it could be disabled or a head could be "depopulated," and the drive would simply be sold as a 2 TB drive, or even a 1 TB drive. Furthermore, if testing showed the error rate was not good enough, Seagate could lower the areal density (reformat) and process a 3TB drive as a lower capacity drive. The drives would then be tested and verified to meet specifications at the lower capacity. This process increased the over-all

(throughput) yield substantially above the "prime" yield numbers for the 3TB drive that Hospodor focuses on.

25. In addition, Seagate did not open and rework all drives that did not pass testing at the 3TB capacity as Hospodor suggests in Paragraph 119. The waterfall process described above was a largely automated process that could be done with test process firmware, and it did not require opening or "repair or reworking" of the drives.

26. The above mistakes in Hospodor's analysis of manufacturing yields lead to the following conclusions. First, Hospodor is wrong to suggest in Paragraph 119 that the yields for the 3TB drive concerned manufacturing of "millions" of drives. As noted, the drive had a very low initial production of SBS drives. Second, he is wrong when he claims that low initial yields of the Grenada Classic 3TB drives would mean that "humans are required to diagnose, repair and rework hundreds of thousands of defective disk drives" – since total production volumes were much lower than that, and drives were waterfalled to lower capacities without any human repair or reworking. Third, Hospodor is wrong when he claims in Paragraphs 120-123 that low yields demonstrate that the drives were "unreliable" or "should not have been released." Hospodor cites no evidence suggesting that the 3TB drives that passed Seagate's testing and were sold to consumers were in any way "unreliable" or had "defects." In fact, Seagate rigorously tested the drives and only shipped passing drives to consumers. If anything, the low yield supports the conclusion that Seagate's manufacturing and quality control processes before shipping the 3TB drives at issue were rigorous and effective.

27. In paragraphs 124-125 Hospodor discusses yields for the Grenada Classic 3TB drives around the time of the "Grenada SAD Approval 10/18/11"—the approval to start shipping the drive for disty/OEM use as an internal, desktop drive. (Ex. 2 [FED_SEAG0026839].) This occurred in Q4 2011, when production volumes of the 3TB Grenada Classic drives were still low, and when Seagate fully anticipated that it would still be in the process of improving yields. As Hospodor acknowledges, the cited document actually shows that Seagate was succeeding in increasing yields. The fact that Seagate had a yield improvement plan ("YIP") is not an indication that anything was

wrong. Yield improvement plans are ubiquitous– all drive manufacturers are trying to improve yield all the time. Again, the listed yields are the prime yields, not the actual throughput yields.

28. Paragraph 126 discusses the initial approval for SBS shipments for the Grenada **BP** – not the Grenada Classic. The Grenada BP was a revised version of the ST3000DM001 drive that went through a new approval process and was first approved for SBS release in April 2012. Again, when this new version of the drive was first approved, production volumes started lower and ramped over time, as yield was projected to improve. Neither the ***actual*** (pre-release) yield data reported for Grenada BP 3TB for WW 41—71.8%—nor the ***projected*** yield for WW46 (a mere 5 weeks later)—79.1%—were in any way a problem. (*See* Figure 1 below; Ex. 3 [FED_SEAG0026867] at 26881.)

rovement Plan	%Eff	RGA Fallout	Classic 17.5	OPR	WW37	WW38	WW39	WW40	WW41	WW42	WW43	WW44	WW45	WW46	Q1'13
ase												PCO 7.0			
for BD/Scratch reduction	20.00%	0.50%	0.29%	FNC2										1.00%	
					0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.00%	
MP								0.00%	0.00%	0.00%	0.50%	6.50%	0.00%	1.00%	
ojection YIELD									73.6%	73.6%	74.1%	80.6%	80.6%	81.6%	
Grenada BP 3T Actual Output Yield					69.0%		56.6%		71.8%						
~~Grenada Classic 3T Actual Output Yield~~					70.4%		70.4%		68.0%						
LRP Grenada BP 3T Budget					78.0%	78.0%	78.0%	78.0%	78.0%	78.0%	78.0%	78.0%	78.0%	78.0%	80%
~~Grenada Classic 3T Projected Yield~~						70.4%	70.4%	70.4%	70.4%	70.4%	70.9%	71.4%	71.4%	72.4%	
Grenada BP 3T Output Projected Yield									71.7%	71.3%	71.8%	78.1%	78.1%	79.1%	
				%WTF			0.80%		2.45%	3.00%	3.00%	3.00%	3.00%	3.00%	

Figure 1 (Ex. 3 [FED_SEAG0026867] at 26881.)

F. Responses to Paragraphs 127-155 of the Hospodor Declaration

29. In Paragraphs 127-155 of his declaration, Hospodor discusses Engineering Change Requests ("ECRs") for the Grenada Classic drive. Hospodor claims that "a large number of post-release changes is indicative of an unstable product" and that "the number of post-release changes were staggering." He also claims that "a large number of temporary changes is indicative of quick fixes that are made to keep the production line running" and that a large number of the ECRs for the Grenada Classic drive were "temporary." These claims are incorrect.

30. First, the Grenada drives were manufactured at three different factories in two different countries, and reached production volumes in the tens of millions per year (counting all sizes) with an incredibly complicated supply chain and multiple sources for every component. ECRs are simply a way Seagate documents each new supplier, source or change in the supply chain.

Because multiple suppliers and sources are most needed to support volume production, not initial release, it is not unusual for Seagate to continue qualifying of suppliers and sources after initial release is approved and during the ramp-up of production. In other words, it is not surprising that many ECRs occurred after Seagate qualified the Grenada Classic drive for SBS release in April 2011 and/or qualified the drive for disty/OEM release on October 18, 2011—since both of these dates are prior to the peak of production. (In particular, the SBS release is low-volume, and production would not have started seriously ramping up until after disty/OEM release in October 2011.) This is consistent with what Hospodor claims to occurred in the timing of the ERCs for the Grenada Classic drives. He claims Figures 19 and 20 show a lot of ECRs after the initial, low volume release in April 2011. His figures show that the number of ECRs peaked in early 2012, as production began to ramp up—which is still before we anticipated peak production of the drives as discussed in Paragraph 22 above.

31. Second, we planned to and did manufacture the Grenada drive over numerous years. There is simply no way that we would have been able to keep the Grenada drive in production for that long and not have to make changes and qualify numerous sources and suppliers during that period. The market and industry has become much more dynamic since the 1990s-early 2000s, which appears to be the last time Hospodor worked in the hard drive industry. Chips, computers, software, peripherals, and customer needs are all changing much more rapidly than they did at that time. As just one example, the Windows and Apple operating systems are now updated regularly over the internet through changes that are automatically pushed to users' computers on a weekly to monthly basis. In the 1990's, people had to obtain and install any new versions of an operating system, and new versions were separated by years. ECRs are required to adapt to this rapidly changing environment and the continuous introduction of new software and new hardware with which the drives have to be compatible. Therefore, we designed the Grenada drive to be very flexible, improvable, adaptable, and we anticipated continuously qualifying or changing sources and suppliers. Therefore, we anticipated continuous ECRs after the drive was first approved for shipment, and this is in no way indicative of a problem.

32. Third, Grenada drives were designed to be used in a variety of environments – including external, USB products, home-built or upgraded desktop computers, and computers manufactured by numerous different OEMs (Dell, HP, Lenovo, Apple, and many smaller companies). The Grenada drives were first approved for shipment in a single external, USB products in April 2011, and then were later qualified for use in desktop computers, which required some changes to the manufacturing and the drives. In addition, after April 2011, test drives were sent to various OEM customers, and Seagate received feedback and requested changes from these customers. All of these changes were documented as ECRs. In this respect, the number of ECRs reflects the number of different customers and applications for the drive, and the fact that Seagate was reacting to customer requests, being flexible, and making sure customers were pleased.

33. For all of the above reasons, the number of "post-release" ECRs for the Grenada Classic is not surprising or unusual in my experience—regardless whether "post-release" is counted as post-April 2011, or post-October 2011.

34. I do not understand what Hospodor means when he claims in Paragraphs 130, 134 and 135 that the Grenada Classic was "unstable." For the reasons explained above and below, the number of ECRs does ***not*** indicate that the Grenada Classic drives sold to consumers were defective or unreliable in any way.

35. Finally, the fact that certain ECRs were labeled as "serious" is not meaningful. An ECR would be labeled as "serious" to indicate that timely action is required, or to indicate that it had a cost impact, that it was in response to a customer request, or for any number of other reasons.

36. The specific ECRs Hospodor discusses also do not show problems with the Grenada Classic drives sold to consumers. I have reviewed the ECRs in question and provide the following responses:

a. Hospodor Paragraph 138, ECR0133245. [redacted]

[redacted]

b. Hospodor Paragraphs 139-140, ECR0135418. [redacted] It has nothing to do with reliability.

c. Hospodor Paragraphs 141-142, ECR0135564. [redacted]

d. Hospodor Paragraphs 145-146, ECR0138496. [redacted] This ECR did not involve any redesign nor a reliability issue.

e. Hospodor Paragraphs 147-155, ECR0148346, ECR 0149074, ECR0149636. [redacted]

[redacted] This chain of events is stated in the documents Hospodor claims to have reviewed. His claims just don't match what the documents actually say.

G. Response to Hospodor Paragraphs 156-168

37. In Paragraphs 156-168, Hospodor claims that 12 firmware "revisions" for the Grenada drives was an "an extraordinarily high number" that suggested problems with the drives. This is not the case. First, three of those firmware releases corresponded to the new versions of the drives. In other words, Grenada Classic, Grenada BP and Grenada BP2 each had a new version of firmware because they had different hardware and some different functionality. Second, the drives were in production from 2011 to 2016—approximately 5 years. Nine firmware revisions—a few for each version of the drive—over five years is not high. As I explained earlier, the Grenada drives were designed to be flexible and adaptable so that they could remain in production over many years and be adapted to meet changing uses, markets and customer expectations. Some of these adaptations were accomplished through firmware revisions. Thus, several firmware revisions were to support changes to the Windows operating system (Windows 8 and then later Windows 10) and new types of peripherals that came on the market over the years that the drives were in production. (CC24, CC26) One firmware revision was made simply to reduce a noise the drive made when transitioning out of idle mode. (CC4H) Others added support for new features. (*e.g.*, CC27) Finally, firmware changes can help improve yields, and some firmware revisions were made for this reason. These firmware changes do not indicate problems with the drives.

38. Hospodor points to only two firmware releases that he claims show problems with the drives. Both of these firmware revisions were to the Grenada Classic drives in early 2012. In Paragraphs 164-166 Hospodor discusses a firmware revision to correct a problem that occurred very

infrequently—on the order of one in a million. Hospodor implies that the problem affected every drive on a regular basis which is just not true. In addition, the problem would not have resulted in loss of data or erroneous command execution but rather the drive being in a not ready state and needing to be restarted.

39. In Paragraphs 167-168, Hospodor discusses another very infrequent issue that was fixed with a firmware update in early 2012. Furthermore, the firmware update in question made several other improvements (including yield improvements). It is unclear whether Seagate would have done the firmware revision simply to address the issue Hospodor identifies. In any event, it was a minor issue.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on this 4 day of January, 2018, at Longmont, Colorado.

Patrick Dewey

Patrick Dewey